

## PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT  
(PCT Article 36 and Rule 70)

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| Applicant's or agent's file reference<br>LODMP31855PC  | <b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416) |  |
| International application No.<br>PCT/GB2004/004575   | International filing date (day/month/year)<br>29.10.2004   | Priority date (day/month/year)<br>30.10.2003 |
| International Patent Classification (IPC) or both national classification and IPC<br>A23L1/30, A61K35/78, A23D7/005, C07C62/32 |  |  |
| Applicant<br>LODERS CROKLAAN BV  |  |  |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of 3 sheets.

## 3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

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| Date of submission of the demand<br><br>26.05.2005   | Date of completion of this report<br><br>04.10.2005   |
| Name and mailing address of the international preliminary examining authority:<br><br>European Patent Office<br>D-80298 Munich<br>Tel. +49 89 2399 - 0 Tx: 523656 epmu d<br>Fax: +49 89 2399 - 4465 | Authorized Officer<br><br>Couzy, F<br><br>Telephone No. +49 89 2399-7503<br> |

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/GB2004/004575**

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-22 as originally filed

**Claims, Numbers**

1-19 received on 16.08.2005 with letter of 15.08.2005

**Drawings, Sheets**

1 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

|                               |             |      |
|-------------------------------|-------------|------|
| Novelty (N)                   | Yes: Claims | 1-19 |
|                               | No: Claims  |      |
| Inventive step (IS)           | Yes: Claims | 1-19 |
|                               | No: Claims  |      |
| Industrial applicability (IA) | Yes: Claims | 1-19 |
|                               | No: Claims  |      |

2. Citations and explanations

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

**V.1 Reference is made to the following documents:**

- D1: US-A-5 466 453 (UCHIDA YUKIO ET AL) 14 November 1995
- D2: DATABASE WPI Derwent Publications Ltd., London, GB; AN 1997-272844  
XP002272810 DONG Y, WANG S, ZHANG R: "Method for extracting raw pine  
needle juice" & CN 1 102 111 A (DONG Y) 3 May 1995
- D3: US-B1-6 190 680 (YOSHINO HISAKO ET AL) 20 February 2001
- D4: LEE Y-H ET AL: "THE CHOLESTEROL-LOWERING EFFECTS OF THE EXTRACT  
FROM PINUS STOBUS IN CHICKENS" HANGUG NYENNYAN SIGRYAN HAGHOI  
JI - JOURNAL OF THE KOREAN SOCIETY OF FOOD AND NUTRITION, PUSAN,  
KR, vol. 25, no. 2, 1996, pages 188-192, XP001026939 ISSN: 0253-3154
- D5: DATABASE WPI Derwent Publications Ltd., London, GB; AN 2002-203307  
XP002272811 JEONG CB: "Production of steamed bread" & KR 2001 091 281 A  
(JEONG CB) 23 October 2001
- D6: US-B1-6 329 000 (JI LING) 11 December 2001
- D7: EP-A-1 129 711 (UNILEVER PLC ;UNILEVER NV (NL)) 5 September 2001
- D8: WO 2004/064757 A (GINSKI MARK ; SHIRE LAB INC (US); COUCH RICHARD A  
(US); KIBALO BEN (US) 5 August 2004
- D9: DATABASE BIOSIS BIOSCIENCES INFORMATION SERVICE, PHILADELPHIA,  
PA, US; Phyton (Horn) 1978; 18: 3-4 1980, LINDNER W, GRILL D: "Acids in conifer  
needles" XP002311085 Database accession no. 198069060322
- D10: DATABASE WPI Week 2001 Derwent Publications Ltd., London, GB; AN 2001-  
495315 XP002311086 LEE HG, LEE SJ, LEE YH, PARK SY: "Novel melanin  
biosynthesis inhibitor" & KR 2001 017 516 A (HAI TAI CONFECTIONARY CO LTD)  
5 March 2001

**V.2 Novelty and inventive step**

Document D1 is regarded as being the closest prior art to the subject-matter of claim 1-19  
and discloses pine needles extracts obtained by extraction with e.g., water or a water-

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International application No. PCT/GB2004/004575

soluble solvent, and their incorporation into foods. There is no suggestion of further fractionation to remove undesirable compounds which might be present in the extract. In contrast, the product according to claim 1 comprises a pine needle extract which contains less than 0.01% compounds of the isocupressic family (vs. about 0.3% in a hot water extract and at least 0.02% in extracts of the prior art: see example 4 and more specifically, p.18-19 of the description). None of the other prior art documents discloses a food product which comprises such a purified pine needle extract. Thus, the subject-matter of claims 1-19 is considered to be new (Art. 33 (2) PCT).

Document D1 is considered to represent the most relevant state of the art because it also discloses the incorporation of extracts of pine needles into foods, also for the purpose of obtaining food products providing benefits in terms of cardiovascular health. Starting from D1 the problem to be solved by the present invention may be regarded as the provision of a extract having an improved activity and which provides improved properties to a food product (see p.8-9 and 19 of the present application). There is no suggestion in D1 that this may be achieved by removing the compounds of the family of isocupressic acid. This is also not suggested by any of the other prior art documents. For instance in D6 the pharmacological activity is again attributed to extracts obtained by extraction with hydrophilic solvents, preferably water, and D7 provides another solution residing in the use of pinolenic acid. Thus, the solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT).

Claims 2-19 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

V.3 The subject-matter of all claims is industrially applicable in the sense of Art. 33 (4) PCT.

CLAIMS

1. Food product comprising a fat continuous emulsion, wherein the emulsion comprises a material comprising one or more organic compounds, said material  
5 being obtainable as an extract from pine needles, wherein the material contains compounds of the isocupressic acid family in an amount of less than 0.01 wt %, preferably less than 0.005 wt %, most preferably less than 0.003 wt %.
2. Food product as claimed in Claim 1, wherein the extract is an aqueous  
10 extract.
3. Food product according to Claim 1 or Claim 2, wherein the material comprises at least 2 components A and B, wherein A is selected from the group consisting of phytosterols, polyphenols, bioflavonoids, tannins, organic acids and  
15 their complexes, and minerals and B is selected from the group consisting of amino acids, peptides, proteins, quercetin, terpenoids, flavonol glycosides, biflavones, proanthocyanidins, polyprenols, lignans and minerals.
4. Food product according to Claim 1 or Claim 2, which comprises at least  
20 one compound A selected from the group consisting of phytosterols, polyphenols, bioflavonoids, tannins, organic acids and their complexes, and minerals, and at least one compound B selected from the group consisting of amino acids, peptides, proteins, quercetin, terpenoids, flavonol glycosides, biflavones, proanthocyanidins, polyprenols, lignans and minerals.
- 25 5. Food product according to Claim 3 or Claim 4, wherein A is present in the material in an amount of from 5 to 60 wt %, preferably 10 to 50 wt %, most preferably 15 to 40 wt % and B is present in the material in an amount of from 1 to 15 wt %, preferably 2 to 12 wt %, most preferably 3 to 10 wt %, all percentages  
30 being based on total weight of the material.

6. Food product as claimed in any one of Claims 1 to 5, wherein the fat continuous emulsion has a fat content of from 0.5 to 99.5 wt %, preferably 20 to 85 wt %, most preferably 30 to 80 wt %.
- 5 7. Food product according to any one of Claims 1 to 6, which is margarine, a low fat spread, a bakery spread or a cooking spread.
8. Food product according to any one of Claims 1 to 7, wherein the fat phase  
10 displays a solid fat content (measured by NMR on a non-stabilised fat) at 5°C (=N5) of > 10, preferably > 20, and a solid fat content at 35°C (=N35) of < 20, preferably < 10, most preferably < 5.
9. Food product according to any one of Claims 1 to 8, comprising fat and  
15 water and having a fat content of from 0.5 to 99.5 wt %, wherein the fat phase comprises at least two components (D) and (E), (D) having an N20>20 and (E) having a content of mono- and di-unsaturated fatty acid residues of at least 25 wt %.
- 20 10. Food product according to Claim 9, wherein component (D) is selected from the group consisting of palm fractions, interesterified hardened palm oil and hardened palm kernel oil and fractions thereof, interesterified mixtures of liquid oils and hardened liquid oils, interesterified fractions of palm kernel oil and palm oil, particularly palm kernel stearine and palm oil stearine, and fractions thereof,  
25 and fat containing at least 20 wt % of SUS triglycerides.
11. Food product according to Claim 9 or Claim 10, wherein (E) has a content of mono- and di-unsaturated fatty acid residues of from 55 to 95 wt %.
- 30 12. Food product according to any one of Claim 9 to 11, wherein component (E) is selected from the group consisting of sunflower oil, high oleic sunflower oil,

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rape seed oil, high oleic rape seed oil, palm oil olein, corn oil, soybean oil,  
high oleic soybean oil.

13. Food product according to any one of Claims 1 to 12, which is essentially  
5 free of trans fatty acids.

14. Food product as claimed in any one of Claims 1 to 13, wherein the  
material is present in the product in an amount of from 0.05 wt % to 10 wt %,  
based on the total weight of the product.

10 15. Food product as claimed in any one of Claims 1 to 14, for use to lower  
blood pressure in mammals, particularly humans.

16. Food product according to any one of Claims 1 to 14, which has one or  
15 more of the following properties compared to a corresponding product that does  
not contain the material: increased hardness, improved texture, increased aeration,  
improved spreadability, improved oral properties, improved mouthfeel, improved  
flavour impact, better colour, improved viscosity, increased ease of processing and  
improved health properties.

20 17. Food product according to any one of the preceding claims wherein the  
material comprises shikimic and/or quinic acid.

18. Food product according to any one of the preceding claims wherein the  
25 material comprises shikimic acid in an amount of from 10 % to 50 % by weight of  
the composition.

19. Food product according to any one of the preceding claims wherein the  
material comprises quinic acid in an amount of from 5 % to 30 % by weight of the  
30 composition.